

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P206PC00	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE00/00781	International filing date (<i>day/month/year</i>) 26.04.2000	Priority date (<i>day/month/year</i>) 30.04.1999
International Patent Classification (IPC) or national classification and IPC ₇ H02J 3/24, H02K 17/44, H02P 9/10, H04B 7/00		
Applicant ABB AB ET AL		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 08.11.2000	Date of completion of this report 18.04.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Antonio Farieta/MN Telephone No. 08-782 25 00

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00781

I. Basis of the report

1. With regard to the **elements** of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement) under article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.These elements were available or furnished to this Authority in the following language English which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00781

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-62</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-62</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-62</u>	YES
	Claims	_____	NO

2. Citations and explanations (Rule 70.7)

The claimed invention relates to a stabilizer in an electric power system that supplies electric power via power line terminal by changing rotational speed of the rotor of an electrical main machine. The stator windings (14) of an electrical main machine (2), are connected to electric power network terminals. A current converter (18) is connected between rotor windings (16) of the main machine and a regulating machine (20) which are operated as independent voltage sources. Since a rotating machine is used in a stabilizer, the stabilizer can have large energy storage in rotating shaft that can be used for transient input and output of active power for damping power oscillations in the electric power network. The rotating stabilizer can compensate for asymmetric operation. The stabilizer is smaller, flexible and of simpler construction. The overload of stabilizer is performed in short time, which makes it possible to maintain nominal power, thereby cost reduction is achieved. By directly monitoring temperatures in stator and rotor windings, overload utilization of the main machine can be performed temporarily at large power transmission, that far exceed the power rating without risking any damages to the machine.

The following documents were cited in the International Search Report:

D1) US 3671850 A
D2) US 4812730 A
D3) US 4723106 A
D4) WO 9834312 A1

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00781

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

generator field winding. An optical transmission technique is used for communicating gate and sync signals between stationary and rotating components. The generator is responsive to loads, the control device includes a device on the rotor for producing a synchronizing signal related to a condition of the exciter power, and a device for transmitting the sync. signal from the rotor to the stationary part.

Document D4 discloses a synchronous machine, e.g. synchronous generator in an electric power network. The synchronous machine has power and/or voltage control. Its stator winding comprises a high-voltage cable with solid insulation, and a rotor having a thermally based rotor current limit intersecting with a thermally based stator current limit in a capability graph at a power factor considerably below the rated power factor or having the thermally based stator current limit in the capability graph. A set of temperature-determining members and/or current or voltage measuring devices are provided for limiting the currents in order to prevent thermal damage. It avoids voltage collapse in power system.

The methods and/or arrangements that are disclosed in documents D1 - D4 show only the general state of the art of the claimed invention. None of these documents discloses any method or arrangement that solve the problems associated with providing stabilizers with sufficient energy storage resources and than can compensate for both reactive and active power, in a flexible way. Furthermore, none of these documents disclose any power system stabilizer, as defined in claims 1 - 26, or any power network, as defined in claims 27 - 52, or any method for stabilizing the voltage in a power system, as defined in claims 53 - 62

Neither/nor of the cited documents D1 - D4, whether considered alone or in combination, suggest a solution according to the present invention as defined in claims 1 - 62. Therefore, it can be conclude that a man skilled in the art, being faced with the problems described above and having knowledge of the cited documents, would not know how to modify and/or improve the methods and/or arrangements so that would lead to a method and/or an apparatus, as the one claimed in the present application.

Therefore, the invention according to claims 1 - 62 is novel (N), is considered to involve an inventive step (IS) and is considered to have industrial applicability (IA).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00781

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

Document D1 discloses an electric generator control system with radio feedback loop. The embodiments include an exciting generator and a power generator. Each of the generators includes a common tubular rotor. The armature of the exciting generator is maintained within the rotor and is fed through a control rectifier to the field of the power generator, which is also maintained within the rotor. The output voltage of the power generator is sampled for modulation of a radio transmitter, which delivers power to a transmitting antenna. A receiving means maintained within the tubular rotor receives and demodulates the signal from the transmitter. The demodulated signal, together with the output of the field generator armature is applied to the control elements of the control rectifier and thus determines the intensity of the power generator field and, correspondingly, the output of the power generator. It provides a control system having relatively high response time so as to facilitate accommodation to transient and fluctuating loads.

Document D2 discloses a variable speed motor-generator unit for water turbine-pump units that uses firing control for frequency converter in energizing circuit for phase synchronization with mains network. The motor/generator unit has a rotor with primary and secondary windings (1P, 1S). The primary winding (1P) is coupled to the electrical network (5) via a main circuit (100), part of which is coupled to an energizing circuit (200) for the secondary winding (1S). The energizing circuit (200) contains a thyristor frequency converter (4) with a firing angle determined by a phase-shifting control (3) in response to the difference between the network frequency and a frequency signal dependent on the rotation of the load (6). A synchronizing device (7) provides a frequency signal corresponding to the network frequency during normal operation and maintains the prior frequency signal upon failure of the mains.

Document D3 discloses a brushless generator exciter power control apparatus. The exciter power control apparatus for an electrical generator comprises at least one exciter winding on the generator rotor and constant-amplitude exciter fields supply. An apparatus, responsive to the exciter field supply includes an AC exciter power in the exciter winding. A control device is responsive to an output of the generator for controlling a portion of the exciter power fed to the

.../...



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :

H02J 3/24, H02K 17/44, H02P 9/10,
H04B 7/00

A1

(11) International Publication Number:

WO 00/67358

(43) International Publication Date:

9 November 2000 (09.11.00)

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(22) International Filing Date: 26 April 2000 (26.04.00)

(30) Priority Data:

9901553-9	30 April 1999 (30.04.99)	SE
9903044-7	27 August 1999 (27.08.99)	SE
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(71) Applicant (for all designated States except US): ABB AB
[SE/SE]; S-721 83 Västerås (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GERTMAR, Lars
[SE/SE]; Humlegatan 6, S-722 26 Västerås (SE).
NYSVEEN, Arne [NO/NO]; Vassbunnveien 12, N-1388
Borgen (NO). LÖF, Per-Anders [SE/SE]; Timrågatan
84, S-162 62 Vällingby (SE). NESTLI, Tom, Fagernes
[NO/NO]; Åsveien 11A, N-1472 Fjellhamer (NO).(74) Agents: HEDBERG, Åke et al.; Aros Patent AB, P.O. Box
1544, S-751 45 Uppsala (SE).

(81) Designated States: AE, AG, AL, AM, AT, AT (Utility model),
AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,
CZ, CZ (Utility model), DE, DE (Utility model), DK, DK
(Utility model), DM, DZ, EE, EE (Utility model), ES, FI,
FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KP, KR, KR (Utility model), KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW,
ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ,
UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD,
RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI
patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR,
NE, SN, TD, TG).

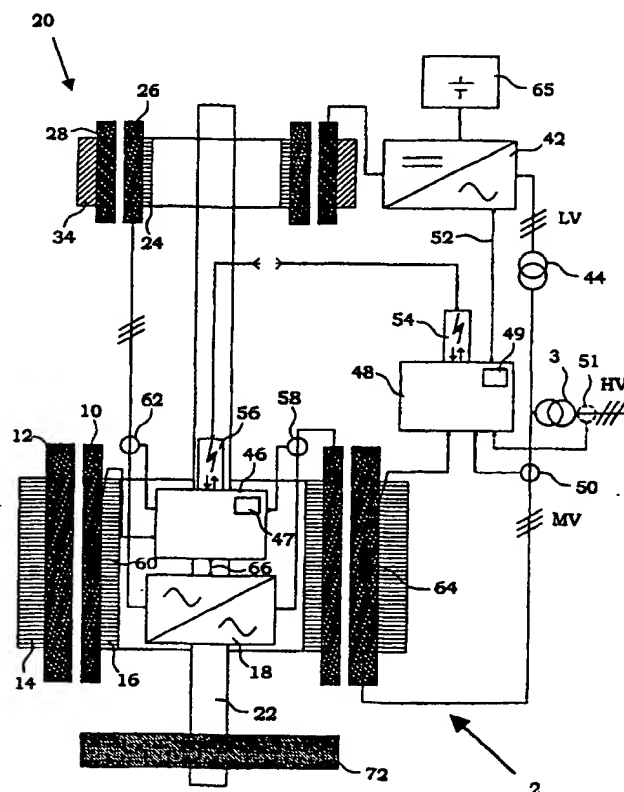
Published

With international search report.
In English translation (filed in Swedish).

(54) Title: ROTATING POWER SYSTEM STABILIZER

(57) Abstract

In the invention, electrical machines (2) with variable rotational speed are utilised as stabilisers in an electric power network. The motion of the rotor (10) corresponds to a certain kinetic energy, and this kinetic energy is used as energy storage for the stabiliser. The electrical machine (2) and its rotational speed are regulated by controlling the current that is sent through the rotor (10). The voltage source and the control means (18) for this are supplied by power from a source, which is independent of the voltage of the electric power network. The voltage source comprises preferably a brushless regulating machine (20) arranged at the same shaft (22) as the electrical main machine (2). By further directly monitoring temperatures in stator (14) and rotor (16) windings, the electrical main machine (2) may temporarily be utilised for large power transmissions, which by far exceed the nominal power.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00781

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H02J 3/24, H02K 17/44, H02P 9/10, H04B 7/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H02J, H02K, H02P, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3671850 A (WALTER E. MEHNERT ET AL), 20 June 1972 (20.06.72), column 1, line 39 - column 4, line 3 --	1-62
A	US 4812730 A (HIROTO NAKAGAWA ET AL), 14 March 1989 (14.03.89), column 3, line 6 - column 6, line 61 --	1-62
A	US 4723106 A (IRVING A. GIBBS ET AL), 2 February 1988 (02.02.88), column 1, line 6 - column 2, line 34; column 3, line 52 - column 4, line 2 --	1-16,27-42, 53-62

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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Date of the actual completion of the international search 3 July 2000	Date of mailing of the international search report 26 -07- 2000
Name and mailing address of the ISA: Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer ANTONIO FARIETA/EE Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE 00/00781

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	3671850	A	20/06/72	NONE	
US	4812730	A	14/03/89	CA 1266507 A DE 3711657 A,C JP 1965876 C JP 6095840 B JP 62236398 A	06/03/90 15/10/87 25/08/95 24/11/94 16/10/87
US	4723106	A	02/02/88	CN 1007394 B DE 3750146 D,T EP 0258760 A,B JP 63059799 A	28/03/90 10/11/94 09/03/88 15/03/88
WO	98/34312	A1	06/08/98	NONE	

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

HEDBERG, Åke
Aros Patent AB
P.O. Box 1544
S-751 45 Uppsala
SUÈDE

Date of mailing (day/month/year)

09 November 2000 (09.11.00)

Applicant's or agent's file reference

P206PC00

IMPORTANT NOTICE

International application No.

PCT/SE00/00781

International filing date (day/month/year)

26 April 2000 (26.04.00)

Priority date (day/month/year)

30 April 1999 (30.04.99)

Applicant

ABB AB et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AG,AU,DZ,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,
GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,
NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 09 November 2000 (09.11.00) under No. WO 00/67358

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a **demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

J. Zahra

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

INFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

From the INTERNATIONAL BUREAU

To:

STENBORG, Anders
Aros Patent AB
P.O. Box 1544
S-751 45 Uppsala
SUÈDE

Date of mailing (day/month/year)

13 December 2000 (13.12.00)

Applicant's or agent's file reference

P206PC00

IMPORTANT INFORMATION

International application No.

PCT/SE00/00781

International filing date (day/month/year)

26 April 2000 (26.04.00)

Priority date (day/month/year)

30 April 1999 (30.04.99)

Applicant

ABB AB et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

National : AG, AU, BG, CA, CN, CZ, DE, DZ, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AL, AM, AT, AZ, BA, BB, BR, BY, CH, CR, CU, DK, DM, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MW, MX, PT, SD,
SG, SI, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" **before the expiration of 30 months from the priority date** before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed **until 31 months from the priority date** for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

F. Baechler

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

ARTICLE 19

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

Aros Patent AB
Bangårdsgatan 8
P.O. Box 1544
751 45 UPPSALA

NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))

Date of mailing
(day/month/year)

08 - 11 - 2000

Applicant's or agent's file reference
P206PC00

IMPORTANT NOTIFICATION

International application No.
PCT/SE00/00781

International filing date (day/month/year)
26-04-2000

Priority date (day/month/year)
30-04-1999

Applicant
ABB AB
et al

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

08-11-2000

2. This date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
- ☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
- ☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPEA/404), received the required corrections.

3. ☐ **ATTENTION:** That date of receipt is **AFTER** the expiration of 19 months from the priority date. Consequently, the election(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the *PCT Applicant's Guide*, Volume II.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/
Patent- och registreringsverket
Box 5055
S-102 42 STOCKHOLM
Facsimile No. 08-667 72 88

Telex
17978
PATOREG-S

Authorized officer

Telephone No. 08-782 25 00

PATENT COOPERATION TREATY

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

From the INTERNATIONAL BUREAU

To:

ANKOM

HEDBERG, Åke
Aros Patent AB
P.O. Box 1544
S-751 45 Uppsala
SUÈDE

Date of mailing (day/month/year) 11 September 2000 (11.09.00)	
Applicant's or agent's file reference P206PC00	IMPORTANT NOTIFICATION
International application No. PCT/SE00/00781	International filing date (day/month/year) 26 April 2000 (26.04.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 30 April 1999 (30.04.99)
Applicant ABB AB et al	

- The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
- An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
30 April 1999 (30.04.99)	9901553-9	SE	03 July 2000 (03.07.00)
27 Augu 1999 (27.08.99)	9903044-7	SE	03 July 2000 (03.07.00)
08 Dece 1999 (08.12.99)	9904478-6	SE	03 July 2000 (03.07.00)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Aime Metcalfe

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

ANKOM

PCT

2000-07-10

NOTIFICATION OF RECEIPT OF RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

HEDBERG, Åke
Aros Patent AB
P.O. Box 1544
S-751 45 Uppsala
SUÈDE

Date of mailing (day/month/year) 04 July 2000 (04.07.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P206PC00	International application No. PCT/SE00/00781

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

ABB AB (for all designated States except US)

GERTMAR, Lars et al (for US)

International filing date : 26 April 2000 (26.04.00)
Priority date(s) claimed : 30 April 1999 (30.04.99)
27 August 1999 (27.08.99)
08 December 1999 (08.12.99)

Date of receipt of the record copy
by the International Bureau : 13 June 2000 (13.06.00)

List of designated Offices :

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

Céline Faust



Telephone No. (41-22) 338.83.38

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum)

P206PC00

Box No. I TITLE OF INVENTION Rotating Power System Stabilizer

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

ABB AB
721 83 Västerås
SWEDEN

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (i.e. country) of nationality: Sweden

State (that is, country) of residence: Sweden

This person is applicant
for the purposes of:

☐ all designated
States

☒ all designated States except
the United States of America

☐ the United States
of America only

☐ the States indicated in
the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

GERTMAR Lars
Humlegatan 6
722 26 Västerås
SWEDEN

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box
is marked, do not fill in below.)

State (that is, country) of nationality: Sweden

State (that is, country) of residence: Sweden

This person is applicant
for the purposes of:

☐ all designated
States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in
the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf
of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Hedberg Åke, Hedman Anders, Kyhlberg Gunnar
Mrazek Werner, Stenborg Anders
Aros Patent AB
P.O. Box 1544
SE-751 45 Uppsala
Sweden

Telephone No.

+46 18 653050

Facsimile No.

+46 18 153050

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS	
<i>If none of the following sub-boxes is used, this sheet is not to be included in the request.</i>	
<p>Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</p> <p>NYSVEEN Arne Vassbunnveien 12 1388 Borgen NORWAY</p>	<p>This person is:</p> <p><input type="checkbox"/> applicant only</p> <p><input checked="" type="checkbox"/> applicant and inventor</p> <p><input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)</p>
State (that is, country) of nationality: Norway	State (that is, country) of residence: Norway
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<p>Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</p> <p>LÖF Per-Anders Timrågatan 84 162 62 Vällingby SWEDEN</p>	<p>This person is:</p> <p><input type="checkbox"/> applicant only</p> <p><input checked="" type="checkbox"/> applicant and inventor</p> <p><input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)</p>
State (that is, country) of nationality: Sweden	State (that is, country) of residence: Sweden
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<p>Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</p> <p>NESTLI Tom Fagernes Åsveien 11A N-1472 Fjellhamar NORWAY</p>	<p>This person is:</p> <p><input type="checkbox"/> applicant only</p> <p><input checked="" type="checkbox"/> applicant and inventor</p> <p><input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)</p>
State (that is, country) of nationality: Norway	State (that is, country) of residence: Norway
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<p>Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</p>	<p>This person is:</p> <p><input type="checkbox"/> applicant only</p> <p><input type="checkbox"/> applicant and inventor</p> <p><input type="checkbox"/> inventor only (if this check-box is marked, do not fill in below.)</p>
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on another continuation sheet.	

Box No. V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria and utility model | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic and utility model | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany and utility model | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark and utility model | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> EE Estonia and utility model | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> FI Finland and utility model | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZA South Africa |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea and utility model | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | |
| <input checked="" type="checkbox"/> LK Sri Lanka | |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet

- ☒ AG Antigua and Barbuda
- ☒ DZ Algeria

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) 30 April 1999	9901553-9	Sweden		
item (2) 27 August 1999	9903044-7	Sweden		
item (3) 8 December 1999	9904478-6	Sweden		

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): (1), (2) and (3)

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): ISA / SE	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority): Date (day/month/year) Number Country (or regional Office)
--	--

Box No. VIII CHECK LIST; LANGUAGE OF FILING.

This international application contains the following number of sheets: request : 4 description (excluding sequencelisting part) : 31 claims : 10 abstract : 1 drawings : 10 sequence listing part of description : _____ Total number of sheets : 56	This international application is accompanied by the item(s) marked below: 1. <input type="checkbox"/> fee calculation sheet 2. <input type="checkbox"/> separate signed power of attorney 3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input type="checkbox"/> other (specify):
---	--

Figure of the drawings which should accompany the abstract: 3	Language of filing of the international application: Swedish
--	---

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Uppsala April 25, 2000
Aros Patent AB

Anders Stenborg

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	
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Date of receipt of the record copy by the International Bureau:		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00174

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H02H 7/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H02H, H02P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5321308 A (A.W. JOHNSON), 14 June 1994 (14.06.94), see whole document --	1-38
A	US 5264778 A (D.S. KIMMEL ET AL), 23 November 1993 (23.11.93), see whole document --	1-38
A	US 4245182 A (H. AOTSU ET AL), 13 January 1981 (13.01.81), see whole document -- -----	1-38

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

28 May 1998

01-06-1998

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Bertil Nordenberg
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT
Information on patent family members

29/04/98

International application No.

PCT/SE 98/00174

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5321308	A	14/06/94	NONE	
US	5264778	A	23/11/93	NONE	
US	4245182	A	13/01/81	CA 1105558 A DE 2813503 A,C JP 53120117 A	21/07/81 12/10/78 20/10/78